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ABSTRACT

A developmental study investigated the pictorial and linguistic main idea identification skills of 104 students in second, fifth, and eighth grades. In the pictorial task, the subjects studied a complete picture story and ranked the effectiveness of four separate main idea alternatives at capturing the meaning of the story. Following the same procedures with a verbal story, subjects chose the most appropriate sentence alternative. The second and fifth grade students performed the tasks individually, and the eighth graders performed them in small groups. Compared with similar studies of adult subjects, the results of the verbal task indicated that children had more difficulty distinguishing between important superordinate and subordinate statements in a main idea identification task than did older students. They also indicated that 11 of the elementary school students had more difficulty distinguishing between subordinate action statements and subordinate setting statements than did adults, although older students appeared better at it than younger ones. The results of the pictorial task indicated that elementary school children of all ages had more difficulty distinguishing between important superordinate and subordinate statements than did adults, with the older students more proficient than the younger ones. These results suggest that both similarities and differences may exist between the processes of verbal and pictorial main idea identification. (HTH)

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Identifying Main Ideas in Picture Stories and Text

by

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Footnote: We thank the administrators, teachers, and children at Maywood, Nichols, and Winnequah Middle schools in Monona, Wisconsin, and Cottage Grove school in Cottage Grove, Wisconsin, for their sustained cooperation in conducting this study.

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Introduction

Two lines of inquiry that have been influential in the area of main idea summarization have been the theory and research concerning story grammars (e.g., Stein & Glenn, 1979; Rumelhart, 1977; Yussen, Mathews, Buss & Kane, 1980) and that conerning "macro-rules" (e.g., Kintsch & Van Dijk, 1978; Brown & Day, 1980). In a previous study, Bingham, Rembold, and Yussen (1983) combined these two theoretical models to create a multiple choice task that examined the development of main idea identification skills. This combination model allowed us to specify what information should theoretically be contained in a 'very good' statement of a story's main idea, and to identify successively poorer alternatives departing from the ideal one.

From the story grammar research, we utilized the notion of a story "kernel," which consists of particular story grammar categories found by Yussen, Mathews, Buss & Kane (1980) to be judged most salient by adults and to be most easily remembered by children. The Yussen et al. study used the Stein and Glenn (1979) grammar, and found that the kernel of a short story consisted of the Initiating Event, the Attempt, and the Consequence. In other words it appeared to be the action elements of the story that formed the salient kernel of the story for children and adults alike. (See Table 1 for a story formulated according to the Stein and Glenn grammar in which the kernel sequences is underlined.)

Insert Table 1 here

From the line of inquiry concerning macro-rules, we were influenced by the rules developed by Van Dijk and Kintsch (e.g., Kintsch & Van Dijk, 1978) for the comprehension and memory of prose. These rules consist basically of:

Table 1

Stein and Glenn's Grammar Applied to a Sample Story

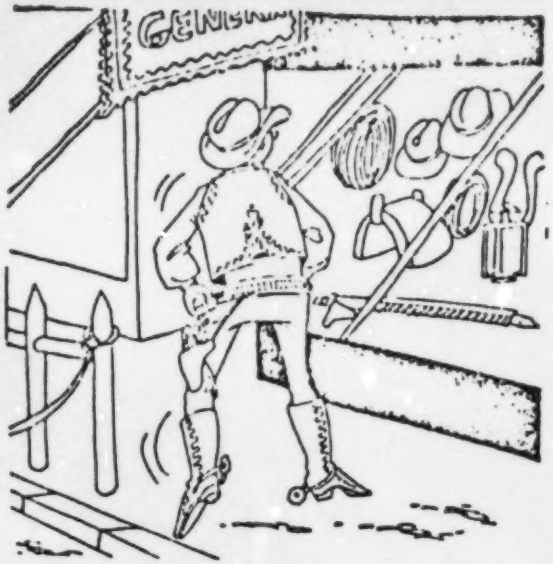
Category	
Setting	1. Once there was a big gray fish named Albert.
	2. He lived in a big icy pond near the edge of a forest.
Initiating event	3. One day Albert was swimming around the pond.
	4. Then he spotted a big juicy worm on top of the water.
Internal response	5. Albert knew how delicious worms tasted.
	6. He wanted to eat that one for his dinner.
Attempt	7. So he swam very close to the worm.
	8. Then he bit into him.
Consequence	9. Suddenly, Albert was pulled through the water into the boat
	10. He had been caught by a fisherman.
Reaction	11. Albert felt sad.
	12. He wished he had been more careful.

Note. Adapted from "An Analysis of Story Comprehension in Elementary school Children" by N.L. Stein and C.G. Glenn, in R.O. Freedle (Ed.), Discourse processing: Multidisciplinary perspectives (Norwood, N.J.: Ablex, 1979), Figures 1 & 2, pp. 60 & 61. Copyright 1979, Ablex publishing. Adapted by permission.

1) generalizing to superordinate concepts from a series of subordinate concepts; 2) deleting irrelevant information; 3) integrating information across propositions; and 4) constructing information at a global level based on information at a less-global level. These rules have been revised by Brown and Day (1980) and found to be applicable to the summarization of paragraphs by experts (rhetoric teachers), as well as to those of 5th, 7th, 10th-grade, and college levels students. When these summarization rules themselves are summarized, they appear to be calling for the integration of important information at the most global level possible.

In developing the multiple choice test for the original study, results from the summarization research (which emphasizes processes) and from the research on story grammar kernels (which emphasizes products) were both taken into consideration. Two of the multiple choice items emphasized important story content (i.e., relevant action) and two emphasized unimportant story content (i.e., the setting or an incorrect action). Simultaneously, two of the items took the form of an integrated, superordinate statement, and two took the form of a more detailed statement. The overlap of these two sets of criteria resulted in the following four types of multiple choice items: 1) an integrated, superordinate statement emphasizing relevant story action; 2) a subordinate statement detailing some aspect of relevant story action; 3) a subordinate statement detailing some aspect of the story's setting; and 4) an integrated, superordinate statement emphasizing incorrect story action. Verbal multiple choice items of these four types were developed for ten picture stories from a standardized test. See Figure 1 for an example of one of the picture stories and the four corresponding items.

Insert Figure 1 here



Put a "1" by what you think is the best main idea, a "2" by the second best, a "3" by the third best, and a "4" by the worst.

Ø8

_____ A cowboy buys some boots.

_____ There are cowboy hats in the store window.

_____ A cowboy robs a store.

_____ A cowboy points to a rope.

Figure 1. Picture story and verbal main idea alternatives from Bingham, Rembold, and Yussen (1983) study.

From the research and theory on summarization rules, combined with the research on story kernels, we predicted that the first type of statement (an integrated superordinate statement of important elements) would be chosen as the best statement of the story's main idea by mature comprehenders. From the research on story kernels it was predicted that the second type of statement, which concerns an important element, would be chosen as better than the remaining two, which describe relatively unimportant elements. Neither theory makes a firm prediction concerning the superiority of the third versus the fourth statement, i.e., a subordinate statement detailing an unimportant element versus a superordinate statement integrating information that is not present in the story. Intuition suggested, however, that true, albeit irrelevant, information would be judged as more representative of the story than inaccurate information, in spite of its form.

We found that adults, on the average, ranked the superordinate integrating statement as the best main idea, the subordinate action statement as second best, the subordinate setting statement as third best, and the superordinate incorrect statement as worst. These ratings were consistent with the predictions concerning mature readers' preferences for the four types of alternatives.

In a developmental study of second, fifth, and eighth grade students, we found that the measure of concordance between child and adult patterns of response increased with age, such that eighth graders responded significantly more like adults than did second graders. The main way that second and fifth graders differed from eighth graders and adults was that they differentiated less between the alternatives. Although the second and fifth graders could fairly easily rule out the incorrect superordinate statement and, to a lesser extent, the subordinate setting statement, they had more difficulty choosing between the

superordinate integration of key story actions, and the subordinate statement of a single story action.

Since the subordinate action statement always described a picture that the children had actually seen in the story, while the superordinate integrating statement seldom did, these results suggested that younger children may have difficulty either in abstractly conceptualizing the overall gist of the story, or in translating it into words, or both, when confronted with a statement of important, albeit isolated, action that they are certain has occurred.

In the present series of studies, an attempt was made to distinguish between these possibilities by formulating a totally verbal form of the task, and a totally nonverbal form of it as well. In this way it would be possible to explore more carefully whether the abstract integration of ideas, or the translation of this abstraction into a verbal statement provided the major stumbling block in main idea identification for young children. In addition, it would allow comparisons to be made between purely verbal and purely ronverbal processes of main idea identification.

In this series of studies, seven preliminary studies with adults were conducted in order to develop the two instruments, and a developmental study of second, fifth, and eighth graders was conducted in order to assess performance on both forms of the task. These studies and their results are described below.

Preliminary Studies

Pilot Study I

Four undergraduates were given the 10 WISC-R picture stories from the Bingham, Rembold, and Yussen study described above, and, after reading an example,

were asked to write brief verbal descriptions telling the stories of the pictures. The stories were presented in a different random order for each subject, and subjects were given unlimited writing time. Based on these verbal descriptions, the authors wrote a verbal version of each story.

Pilot Study II

Each verbal story resulting from the first pilot study was placed on a page with its corresponding picture story and a scale from one to ten. The order of the stories was randomized and 21 undergraduates were asked to rate how well the verbal story reflected the meaning of the picture story, with a score of one representing a very poor match between the stories and a score of ten representing a very good match. When the ratings for each story were averaged across subjects, only two stories received an average rating below 8.00. Stories #8 and #9, receiving average ratings of 7.57 and 6.86 respectively, were then revised based on informal reports from the subjects.

Pilot Study III

The eight highly-rated verbal stories from Pilot Study II, plus the two revised stories and a new example story, were placed on pages with their corresponding picture stories and a scale from one to ten. In a procedure identical to the prior study, 20 undergraduates rated how well the verbal stories reflected the meaning of the picture stories. When the ratings for each story were averaged across subjects, all of the stories received an average rating of 8.20 or greater. On the basis of these findings, it was determined that all of the verbal stories were similarly close approximations to the corresponding picture stories.

Pilot Study IV

A series of forty verbal main idea alternatives (four per story), originally formulated by Bingham, Rembold, and Yussen for use with the 10 WISC-R picture

stories, were revised for use with the verbal versions of the stories. A similar set was formulated for the example story. Each set contained: 1) a superordinate statement integrating story actions; 2) a subordinate statement detailing a specific story action; 3) a subordinate statement detailing some aspect of the story's setting; and 4) a superordinate statement introducing action that did not actually occur in the story.

These sets of main idea alternatives were then placed on pages following their respective stories. Twenty undergraduates were asked to read each story and then rank order,from best to worst, the four verbal main ideas provided for each of the 10 stories and the example story. Subjects were asked to rank the best alternative with a one, the second best with a two, and so on. When the rank orderings of the different alternatives were averaged across subjects, the same pattern of responses was found for all but one of the stories. This pattern, as in the Bingham, Rembold, and Yussen study, consisted of the superordinate integrating statement being ranked as the best main idea, the subordinate action statement being ranked as second best, the subordinate setting statement being ranked as third, and the superordinate incorrect statement being ranked as worst. For the example story, the response pattern differed slightly in that the second and third choices were reversed. On the basis of these findings, the main idea alternatives were believed to be reasonably consistent from story to story.

Pilot Study V

Using the main idea alternatives from Pilot Study IV, a picture was conceptualized for each alternative in each story and drawn by an artist. Each of these 44 pictorial main idea alternatives (four for each of the 11 stories) was then

placed on a page with its corresponding verbal main idea alternative and a scale from one to ten. The order of alternatives was randomized and 21 undergraduates were asked to rate how well the verbal alternatives reflected the meaning of the pictorial alternatives, with a score of one representing a very poor match and a score of ten representing a very good match. When the ratings for each alternative were averaged across subjects, 11 of the 44 alternatives received average ratings of less than 7.00, with eight of the 11 receiving ratings less than 6.00. These 11 pictorial alternatives were then revised on the basis of informal reports from the subjects.

Pilot Study VI

The 33 highly-rated and the 11 revised pictorial main ideal alternatives from Pilot Study V were each placed on a sheet of paper with their corresponding verbal main idea alternative and a scale from one to ten. In an identical procedure to Pilot Study V, 15 undergraduates rated how well the verbal alternatives reflected the meaning of the pictorial alternatives. When the ratings of each alternative in each story were averaged across subjects, improvement was found for most of the revised items. Although nine of the 44 alternatives still obtained an average rating of less than 7.00, only five of these obtained average ratings less than 6.00. Since it was determined that further revision of the pictorial main idea alternatives was not feasible without major revision of the verbal main idea alternatives, which had already been shown to possess desirable properties, the average ratings of pictorial-verbal congruence were inspected to determine if any of the four main idea alternatives were favored over the others. The average ratings for each of the four types of alternatives can be seen in Table 2.

Table 2

Average Adult Ratings of Pictorial - Verbal Congruence

Across 15 Subjects and 11 Stories

(Pilot Study VI)

	Main Idea Alternatives			
	Superordinate Integrated Action	Superordinate Action Detail	Superordinate Setting Aspect	Superordinate Incorrect Integration
$\bar{X}$	7.77	8.54	7.85	7.57
S.D.	1.69	.81	1.98	1.99

Insert Table 2 here

A Kruskal-Wallis nonparametric one-way analysis of variance was conducted on the average ratings of the four categories across all 11 stories, and was found to be significant at the .05 level (i.e., 364.08 > 5.99). However, when the six post hoc pairwise comparisons were computed in order to compare each of the categories with each other category, none of these comparisons were significant at the .05 level. On the basis of these findings it was determined that although some of the 44 main idea alternatives possessed a lower level of congruence between the pictorial and verbal forms than the other alternatives did, these lower congruences were randomly distributed within the four types of main idea alternatives. As a result, even though the pictorial and verbal forms of the main idea task were not parallel across all 11 stories, these individual discrepancies would not be expected to systematically influence the overall outcome of the two types of main idea tasks.

Pilot Study VII

The 11 sets of pictorial main idea alternatives (four in each set) were arranged on pages following their respective picture stories and randomized. Twenty-one undergraduates were asked to look over each picture story and then rank order the pictorial main idea alternatives from best to worst. Subjects were asked to rank the best alternative with a one, the second best with a two, and so on. When the rank orders for each alternative in each story were averaged across subjects, all of the stories but two exhibited the same pattern of responses. This pattern, as in the Bingham, Rembold, and Yussen study, consisted of the superordinate integrating statement being ranked as the best main idea, the subordinate action statement being ranked as second best, the subordinate

setting statement being ranked as third, and the superordinate incorrect statement being ranked as worst. One of the stories exhibited a slightly different pattern of responses in that the third and fourth ranked choices were reversed. The other story possessed an idiosyncratic response pattern that could be traced, via informal interviews with subjects, to a misconception concerning one of the alternatives. On the basis of these results the one idiosyncratic story was removed from the study and the main idea alternatives of the remaining ten stories were determined to be reasonably similar to one another.

Summary

The cumulative findings of the preceding preliminary studies resulted in the construction of the following three instruments: 1) a linguistic version of the 10 WISC-R picture stories, with each story judged by adults to be highly similar to the corresponding picture story; 2) a revised linguistic main idea task, in which each set of alternatives elicited the same pattern of adult responses; and 3) a pictorial main idea task in which, once again, each set of alternatives elicited a consistent pattern of responses from adults. The congruence between the linguistic and pictorial versions of the main idea task was rated highly by adults for 33 of the individual alternatives. The remaining 7 alternatives, which were rated as less congruent, appeared randomly across the four categories of alternatives so that none of the categories received significantly higher congruence ratings than the other categories.

These three instruments, along with the original WISC-R picture stories, were combined to form: a set of 10 picture stories and a pictorial main idea task; and a set of 10 parallel linguistic stories and a linguistic main idea task. Se Figures 2 and 3 for examples of a picture story and a corresponding

item from the pictorial main idea task. See Figure 4 for examples of a parallel linguistic story and a corresponding item from the linguistic main idea task.

Insert Figures 2-4 here

Developmental Study

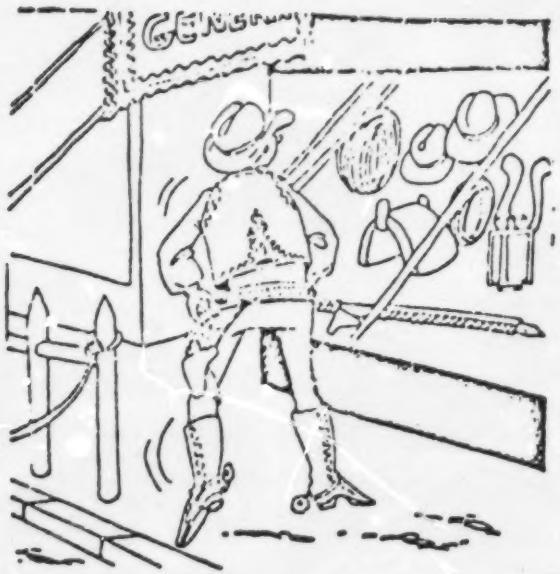
The two versions of stories and main idea tasks developed with adults and described above were given to children of three different ages so that both pictorial and linguistic main idea skills could be examined developmentally. Bingham, Rembold, and Yussen found that when second, fifth, and eighth graders were presented with a verbal test of main idea skills, following presentation of picture stories, children more closely approximated an adult response pattern with age. For example, although second graders were equally likely to choose a subordinate action statement or a superordinate integrating statement as the "best" main idea statement of a story, eighth graders were much more likely to choose the superordinate integrating statement as best and the subordinate action statement as second best. The present study was designed to determine what insight the pictorial versus verbal findings might allow into the difficulties that young children frequently encounter in identifying and producing main ideas.

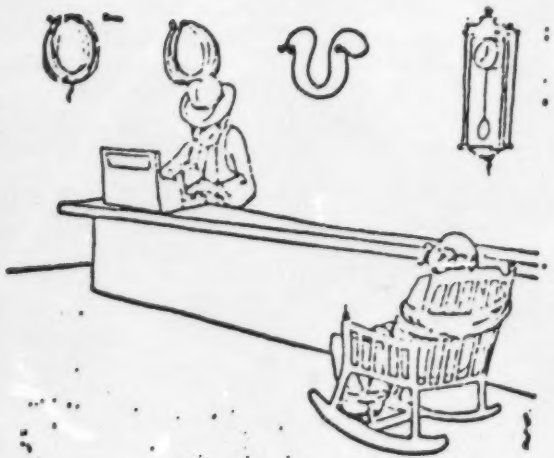
Methods

Subjects

One hundred and four students from four public schools in the Monona, Wisconsin area participated in the experiment. Thirty-two of these students were in the second grade (average age = 7;8), 31 were in the fifth grade (average age = 10;8),

Figure 2
Story No. 8



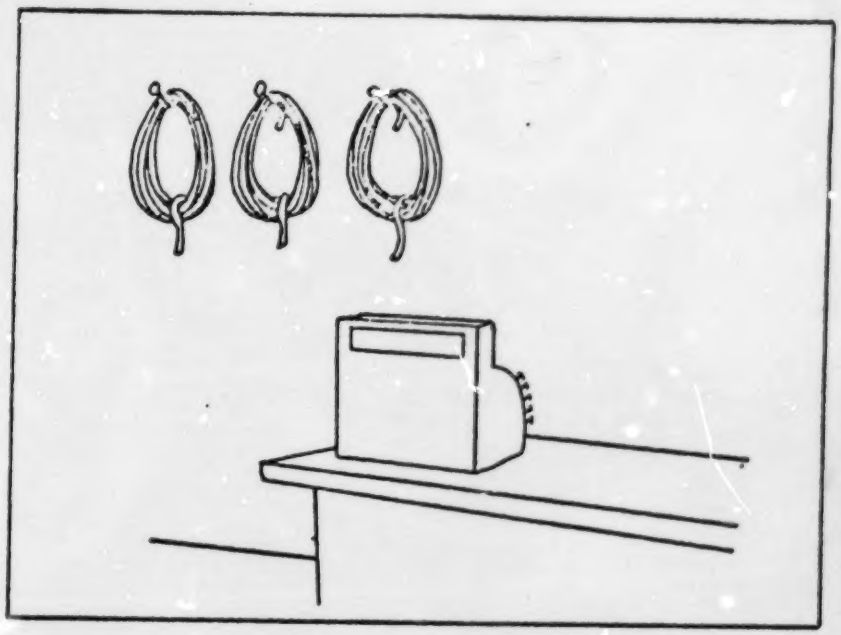


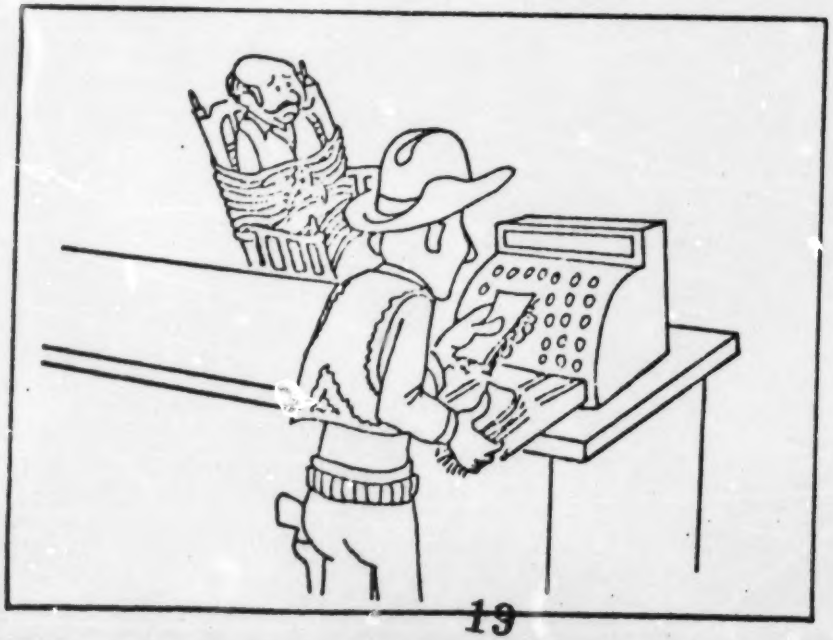
17

18

Figure 3
Main Idea Choices
for Story No. 8

Put a "1" by what you think is the best main idea, a "2" by the second best, a "3" by the third best, and a "4" by the worst.





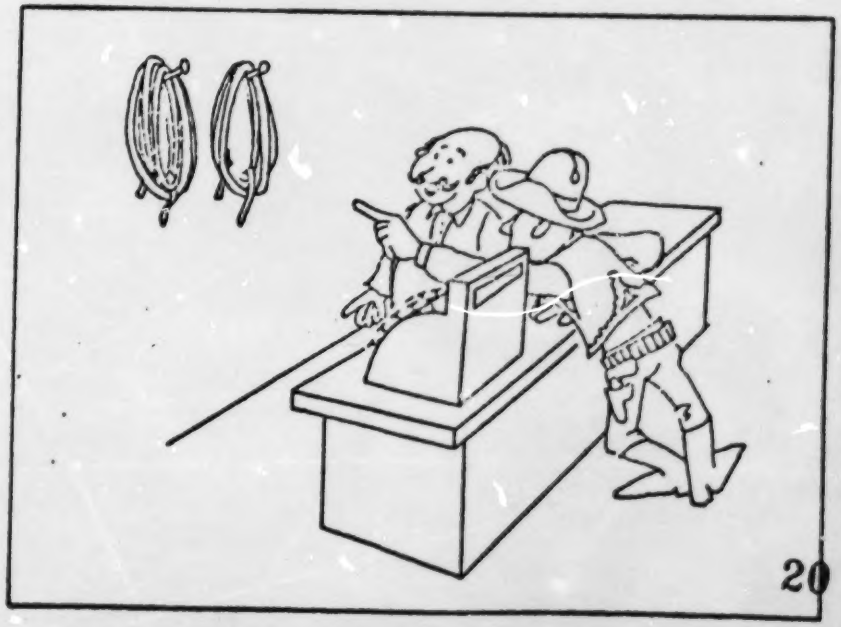


Figure 4

STORY VIII

A cowboy walks into a store.

He asks the owner for some rope.

The cowboy buys the rope.

He uses it to tie the owner to a chair. Then the cowboy takes the money from the cash register.

Put a "1" by what you think is the best main idea, a "2" by the second best, a "3" by the third best, and a "4" by the worst.

_____A cowboy buys some clothes.

_____There is some rope in a store.

_____A cowboy uses a rope to rob a store.

_____A cowboy asks for some rope.

and 30 were in the eighth grade (average age = 13;6). There were approximately equal numbers of boys and girls at each age level. All subjects were native English speakers, predominantly white, and middle class.

Design

Approximately half of the students at each grade were randomly assigned to view picture stories and complete the pictorial main idea task. The other half of the students read verbal stories and completed the verbal main idea task.

Procedure

For the second and fifth graders, testing for both the pictorial and verbal main idea tasks was conducted individually. The primary reason for this individual presentation was to rule out as many decoding difficulties as possible in the verbal condition, and to keep the pictorial task as similar as possible to the verbal task. For the eighth graders, testing for both tasks was conducted in small groups, since decoding was not expected to be a problem.

The pictorial task for second and fifth graders was conducted as follows. Students were shown a complete picture story on a single sheet of paper. (Each story contained between three and five pictures.) When they indicated that they had had sufficient time to examine the story, students were presented with the four separate, pictorial main ideal alternatives and asked: "Out of these four pictures, which single one do you think captures the whole meaning of the story? In other words, if you could choose only one picture to tell someone else this whole story, which one would you choose?" After a picture had been selected it was removed and students were asked to pretend that they only had the remaining three pictures to choose from, and to choose only one that would best tell someone the whole story. After another picture was chosen and removed, the procedure

was repeated until only one pictorial alternative remained. This alternative was designated as the worst choice and the entire procedure was repeated for the next story. For the example story students were given corrective feedback concerning the order of their choices; for the remaining nine stories the students' chosen orders were simply responded to neutrally. The story itself remained available to the students as they made their selections from the main idea alternatives.

The verbal task procedure for second and fifth graders was nearly identical to that of the pictorial task. Students were shown a complete verbal story, which they read aloud with the experimenter. Then students were presented with the four separate, verbal main idea alternatives, also read aloud with the experimenter, and were asked to choose the single sentence that they thought best captured the meaning of the entire story. After a sentence was chosen and removed, the procedure was repeated and the remaining sentences were removed one by one, as described above. As with the pictorial task, students were given corrective feedback on the example story only. And, as before, they were able to refer to the story itself during the entire time in which they made their main idea selections.

The procedure followed for the eighth graders for both the pictorial and verbal tasks was modified from the second and fifth grade procedure so as to be compatible with a small-group mode of presentation. This modification consisted of including all of the stories and their respective main idea alternatives in booklets, along with directions to examine the stories and rank order the main idea alternatives from best to worst. Students were also assured that the experimenter would answer any questions that arose concerning either procedure or content.

Scoring and Analyses

Five measures were obtained for each student, regardless of whether they participated in the verbal or pictorial condition. The first of these measures

was the total number of stories, out of a possible nine, for which a student chose the superordinate integrating statement as the best main idea alternative. This score is referred to as "number correct" since adult subjects in the pilot studies consistently chose this type of alternative as the best statement of a story's main idea.

The number correct scores were analyzed by conducting all possible Dunn pairwise comparisons, in both verbal and pictorial conditions, at an α level of .05 for each condition. This resulted in three planned comparisons within each condition: second graders versus fifth graders, fifth graders versus eighth graders, and second graders versus eighth graders.

The remaining four measures found for each student were the average ranks assigned to the four categories of alternatives across all nine stories. Each student was given a score for: 1) the average of the ranks which he or she assigned to the nine superordinate integrating statements; 2) the average of the ranks assigned to the nine subordinate action statements; 3) the average of ranks assigned to the nine subordinate setting statements; and 4) the average of ranks assigned to the superordinate incorrect statements. These scores are referred to as: average MI rank, average 1 ACT rank, average SET rank, and average WR rank, respectively. In order to examine the ordering of the four alternatives at each grade level, the average ranks for each student were themselves rank ordered and a series of three Friedman planned comparisons were conducted, with an overal α of .05 for each grade. This analysis consisted of comparing the MI and 1 ACT alternatives, the 1 ACT and SET alternatives, and the SET and WR alternatives, to determine whether or not the assigned ranks for the alternatives were significantly different from one another at each age level.

Results

The average number of correct choices for each condition and in each grade can be found in Table 3.

Insert Table 3 here

The first result of interest is that all of the cell means in Table 3 are significantly different from a score of 2.25, which is the number correct that would be expected to occur by chance alone. This indicates that even the youngest children are responding to the tasks in a systematic, rather than a random, fashion.

In the verbal condition, the Dunn planned comparisons reveal a significant difference between number correct for second versus fifth graders ($t_{53} = 3.33$, $p < .017$), and for second versus eighth graders ($t_{53} = 4.92$, $p < .017$), but not for fifth versus eighth graders ($t_{53} = 2.22$, $p > .017$). In the pictorial condition, the Dunn planned comparisons reveal the same pattern of results in that second graders obtained significantly lower scores than both fifth graders ($t_{45} = 3.07$, $p < .017$) and eighth graders ($t_{45} = 4.46$, $p < .017$), but fifth graders and eighth graders did not differ significantly from one another ($t_{45} = 1.42$, $p > .017$).

The second set of results are the averaged mean ranks of the alternatives at each grade level for the verbal and pictorial tasks. The verbal and pictorial ranks can be found in Tables 4 and 5, respectively. The underlined values in

Insert Tables 4 and 5 here

Table 3

Average Number of Correct Responses in Verbal and Pictorial Conditions for Second, Fifth, and Eighth Grade Students

Condition	Grade		Number Correct
V	2 (N=15)	$\bar{X}$	3.87
		S.D.	2.32
	5 (N=15)	$\bar{X}$	6.27
		S.D.	2.46
	8 (N=15)	$\bar{X}$	7.87
		S.D.	1.60
P	2 (N=17)	$\bar{X}$	3.82
		S.D.	2.07
	5 (N=16)	$\bar{X}$	5.75
		S.D.	1.57
	8 (N=15)	$\bar{X}$	6.67
		S.D.	1.72

these two tables represent those ranks that were not found to significantly differ from one another on the basis of the Friedman tests.

In Table 4, it can be seen that second graders in the verbal condition did not rank the MI alternatives as significantly different from the 1 ACT alternatives ($t_\infty = .64$, $p > .017$), nor the 1 ACT alternatives as significantly different from the SET alternatives ($t_\infty = 1.48$, $p > .017$). The SET alternatives, however, were ranked significantly differently from the WR alternatives ($t_\infty = 3.03$, $p < .017$). For the fifth graders, the same pattern of results was found, such that the MI and 1 ACT alternatives were ranked similarly ($t_\infty = 1.59$, $p > .017$), the 1 ACT and SET alternatives were ranked similarly ($t_\infty = 1.29$, $p > .017$), and the SET and WR alternatives were ranked significantly differently ($t_\infty = 2.74$, $p < .017$). The pattern for the eighth graders was different in that MI and 1 ACT alternatives were ranked significantly differently ($t_\infty = 2.06$, $p < .017$). Like the second and fifth graders, however, the 1 ACT and SET alternatives were ranked similarly ($t_\infty = 1.70$, $p > .017$), and the SET and WR alternatives were ranked significantly differently ($t_\infty = 2.06$, $p < .017$). For purposes of comparison, the adults from Pilot Study IV ranked the MI and 1 ACT alternatives significantly differently ($t_\infty = 2.57$, $p < .017$), the 1 ACT and SET alternatives significantly differently ($t_\infty = 2.20$, $p < .017$), and the SET and WR alternatives significantly differently ($t_\infty = 2.57$, $p < .017$).

In the pictorial condition, the second graders ranked the MI and 1 ACT alternatives similarly ($t_\infty = .25$, $p > .017$), the 1 ACT and SET alternatives significantly differently ($t_\infty = 4.11$, $p < .017$), and the SET and WR alternatives similarly ($t_\infty = .79$, $p > .017$). The results for the fifth and eighth graders followed the same pattern of differences. The MI and 1 ACT alternatives were rated similarly ($t_\infty = 1.64$, $p > .017$ for fifth; $t_\infty = 1.82$, $p > .017$ for eighth), the 1 ACT and

Table 4

Summary of Friedman Planned Contrasts for Within - Grade Differences in Average Ranks

Verbal Main Idea Task Grade	MI Integrated Important	1 ACT Unintegrated Important	SET Unintegrated Unimportant	WR Integrated Unimportant
2nd	1.57	1.87	2.57	4.00
5th	1.31	2.06	2.67	3.96
8th	1.13	2.10	2.90	3.87
Adults[a]	1.00	2.05	2.95	4.00

[a]Data from Pilot Study IV

Table 5

Summary of Friedman Planned Contrasts for Within - Grade Differences in Average Ranks

Pictorial Main Idea Task Grade	MI Integrated Important	1 ACT Unintegrated Important	SET Unintegrated Unimportant	WR Integrated Unimportant
2nd	1.76	1.65	3.47	3.12
5th	1.12	1.87	3.19	3.81
8th	1.07	1.93	3.40	3.60
Adults[a]	1.00	2.07	3.20	3.73

[a]Data from Pilot Study VII

SET alternatives were rated significantly differently ($t_\infty = 2.89$, $p < .017$ for fifth; $t_\infty = 3.12$, $p < .017$ for eighth), and the SET and WR alternatives were rated similarly ($t_\infty = 1.36$, $p > .017$ for fifth; $t_\infty = .42$, $p > .017$ for eighth). For purposes of comparison, the adults from Pilot Study VII ranked the MI and 1 ACT alternatives significantly differently ($t_\infty = 2.27$, $p < .017$), and the 1 ACT and SET alternatives significantly differently ($t_\infty = 2.40$, $p < .017$), although they ranked the SET and WR alternatives similarly ($t_\infty = 1.12$, $p > .017$).

In summary, for the verbal task the major distinction made by the second and fifth graders was between the SET and WR alternatives. The eighth graders also made this distinction, and distinguished between the MI and 1 ACT alternatives as well. The adults made these distinctions as well and, in addition, distinguished between the 1 ACT and SET alternatives. For the pictorial task, the major distinction made by second, fifth, and eighth graders was between the 1 ACT and SET alternatives, whereas the adults made this distinction as well as one between the MI and 1 ACT alternatives.

Discussion

The results of the verbal task, like those of the Bingham, Rembold, and Yussen study, indicate that younger students (i.e., 2nd and 5th graders) have more difficulty distinguishing between important superordinate statements and important subordinate statements in a main idea identification task than do older students and adults. In addition, the verbal task results indicate that all of the elementary school students have more difficulty distinguishing between subordinate action statements and subordinate setting statements than adults do, although older students appear to be somewhat better at this than the younger ones, as Bingham, Rembold, and Yussen also found.

These results suggest that younger elementary school aged children encounter two difficulties in the verbal main idea identification process: choosing between more and less important statements about stories, and choosing between superordinate and subordinate types of statements that contain important story information. According to two current theories in the reading comprehension literature, both of these skills are critical for identifying and formulating main ideas, and their absence provides some insight into why younger children do poorly on verbal main idea identification and production tasks.

The results of the pictorial task indicate that elementary school children of all ages have more difficulty distinguishing between important superordinate statements and important subordinate statements than adults do, although older students are somewhat more skillful than younger students. In addition, elementary school students of all ages, as well as adults, have difficulty distinguishing between superordinate and subordinate statements concerning unimportant story content.

These results suggest that both similarities and dissimilarities may exist between the processes of verbal and pictorial main idea identification. One apparent similarity is the difficulty that elementary school students, especially younger ones, have in choosing between superordinate and subordinate types of statements that contain important story information. One apparent dissimilarity is the comparative lack of difficulty in choosing between more and less important statements experienced by students in the pictorial condition.

When the results of the present study are considered alongside those of the Bingham, Rembold, and Yussen study, a consistent finding is that younger children have difficulty appreciating the importance of superordinate statements that integrate information in main idea statements, regardless of whether the

statements are cast in a verbal or pictorial form. In addition, children who participate in verbal identification tasks also have difficulty distinguishing between important and unimportant information unless the information is clearly incorrect. As such, one would assume that teaching strategies that emphasize not just one but both of these skills would be most useful in helping young children to acquire main idea identification skills.

Furthermore, given the indication that children experience both similar and dissimilar problems in performing the pictorial and verbal main idea identification tasks, a logical conclusion is that some aspects of the main idea identification process are independent of the actual mode in which the processing occurs, although other aspects of this process are mode-dependent. As such, one might expect that main idea skills taught in Mode A may strengthen main idea skills in Mode B, although additional training in Mode B would be necessary for optimal performance in this mode.

In summary, the results of the present study are helpful in providing insight both into the practical question of why young children have difficulty identifying main ideas, and into the more theoretical question of how main idea identification processes differ across modes. With regard to the first question, the present data suggest that young children experience difficulty with both the form and content of main idea statements, particularly in verbal tasks. With regard to the second question, the data suggest that similarities as well as differences occur across modes in the main idea identification process.

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